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Offseason Flowering and Fruit Characters of Strawberry under Polyhouse Condition

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Abstract: Flowering period of main crop of strawberry varied from February-March after winter dormancy and time of harvesting varied between March to April depending on climatic conditions. There was occurrence second flush during rainy season therefore study on performance strawberry genotypes during off season flowering and fruit characters. Time of full bloom varied from 6-9 June to 14-18 June depending on climatic condition prevails. Fruit set time varied from 8-12 June to 21-24 June in different genotypes. Earliest fruit set taken place in Douglas (during 8-12 June) followed by Ofra (13-14 June), Jutog Special (14-18 June) however in Sweet Charly fruit set was little late (21-24 June). Harvesting of different genotypes was in between 5th July (Ofra) to 15 July (Belrubi). Fruit weight in different genotypes varied from 17.8-24.7g with highest in Chandler (24.7g) and minimum was recorded in Belrubi (17.8g). The highest fruit length was observed in Chandler (37.45mm) and minimum was with (Belrubi (26.12mm). Fruit length in different genotypes was varied from 14.85mm to 18.65mm with maximum in Chandler (18.65mm) and minimum in Jutog Special (14.85mm). The maximum TSS was recorded in Jutog Special (10.2%) and minimum in Belrubi (6.8%).

INTRODUCTION

Strawberry (*Fragaria × ananassa* Duch.) is a native of France and belongs to the family Rosaceae. Botanically it is an aggregate fruit which is highly perishable in nature. All cultivated varieties are octaploid (2n=56). In temperate climate condition,

its plants behave like a small perennial herb (Finn and Strike, 2008) with shallow root system whereas in sub-tropical climate it behaves as annuals. Owing to its medicinal properties (anti-carcinogenic, anti-diabetic and antioxidant), strawberry is gaining popularity among all age group consumers (Asrey

and Patel, 2003). Strawberries are good source of natural anti-oxidant, carotenoids, vitamins, phenols, flavonoids, dietary glutathione and metabolites (Larson, 1988). It is one of the best natural sources of antioxidant, vitamin 'C', proteins and minerals like P, K, Ca and Fe. It is mainly cultivated in Maharashtra, Himachal Pradesh, Uttar Pradesh, West Bengal, Delhi, Haryana, Punjab and Rajasthan. The introduction of day neutral cultivars, fertigation, green house, standardization of agro-techniques and improved storage techniques has revolutionized the strawberry industry. Strawberry prefers soil reasonably rich in humus because of 70-90 % of its roots found in the top 15 cm soil. It grows well on soil with pH 5.0-7.5. The strawberry plants are strongly affected by the environmental parameters like temperature, photoperiod and light intensity. In cold climate, frost as well as winter injury seriously reduce yield of strawberry. Photoperiod has a marked effect on strawberry vegetative growth, plant morphology and yield. Generally strawberry starts flowering during February-March after winter dormancy and time of harvesting varied from March-April depending on climatic conditions. There was occurrence second flush during rainy season therefore study on performance strawberry genotypes during off season flowering and fruit characters.

MATERIAL AND METHODS

Six strawberry (*Fragaria × ananassa*) genotypes Chandler, Belrubi, Sweet Charly, Douglas, Jutog Special, Ofra grown in polyhouse (planted in plastic pots) were evaluated for fruit set and fruit characters. Study was conducted during 2014 and 2015 at Horticultural Research Farm, ICAR- Indian Agricultural Research Institute, Regional Station, Shimla. Data on time of flower bud initiation, time of full bloom, time of fruit set, time of fruit harvesting, fruit size, fruit weight and TSS were recorded. Fruits were harvest at full maturity (full red colour). Fresh weight of fruits was measured using electronic balance and length and width of

fruits were measured by digital calipers. Total soluble solids (TSS), expressed in Brix, were measured using digital refractometer.

RESULTS AND DISCUSSION

Data presented in table-1 (pooled information of two years) revealed that off season bud initiation started on 24th May (Jutog Special, Ofra) and continued upto 10th June (Sweet Charly). Time of full bloom varied from 6-9 June to 14-18 June depending on climatic condition prevails. Earliest bloom takes place in Douglas (6-9 June) whereas Sweet Charly bloom period was late (in between 14-18 June) rest genotypes were in between. Fruit set time varied from 8-12 June to 21-24 June in different genotypes. Variability in flowering period in different varieties might also be due to differences in their chilling requirement as suggested by Badiyala and Joolka (1983) or due to differences in their genetic makeup as opined by Li et al. (1993). Earliest fruit set taken place in Douglas (during 8-12 June) followed by Ofra (13-14 June), Jutog Special (14-18 June) however in Sweet Charly fruit set was little late (21-24 June). Harvesting of different genotypes was in between 5th July (Ofra) to 15 July (Belrubi). Fruit weight in different genotypes varied from 17.8-24.7g with highest in Chandler (24.7g) followed by Ofra (21.5g), Jutog Special (19.1g) whereas minimum was recorded in Belrubi (17.8g). the highest fruit length was observed in Chandler (37.45mm) followed by Ofra (32.45mm), Jutog Special (30.61mm) and minimum was with (belrubi (26.12mm). Fruit length in different genotypes was varied from 14.85mm to 18.65mm with maximum in Chandler (18.65mm) and minimum in Jutog Special (14.85mm) rest were in between these two genotypes. The maximum TSS was recorded in Jutog Special (10.2%) followed by Sweet Charly (9.8%), Chandler (9.6%) where as minimum was found in Belrubi (6.8%). Variation in fruit characters in strawberry may be due to genetic character of individual genotype (Asrey and Singh, 2004).

Table 1
Evaluation of strawberry genotypes for off season fruiting under polyhouse condition

<i>S.No.</i>	<i>Genotypes</i>	<i>Time of flower bud initiation</i>	<i>Time of full bloom</i>	<i>Time of fruit set</i>	<i>Time of fruit Harvesting</i>	<i>Fruit weight (g)</i>	<i>Fruit length (mm)</i>	<i>Fruit width (mm)</i>	<i>TSS (%)</i>
1	Chandler	26 may-7 June	8-14 June	18 -2June	9-13 July	24.7	37.45	18.65	9.6
2	Belrubi	1 June-8 June	10-13 June	16-20 June	10-15 July	17.8	26.12	15.21	6.8
3	Sweet Charly	5 June-10 June	14-18 June	21-24 June	9-12 July	18.1	29.10	16.54	9.8
4	Douglas	25 May-6 June	6-9 June	8-12 June	9-13 July	17.9	26.66	15.23	7.8
5	Jutog Special	24 may-5 June	8-12 June	14-18 June	8-12 July	19.1	30.61	14.85	10.2
6	Ofra	24 May-7 June	8-13 June	13-18 June	5-11 July	21.5	32.45	16.11	8.1

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